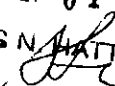


UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF GEORGIA  
ATLANTA DIVISION

 **ORIGINAL**  
FILED IN CLERK'S OFFICE  
U.S.D.C. - Atlanta

SEP 01 2011  
JAMES N. HATTEN, Clerk  
By:   
Deputy Clerk

RAW FILMS, INC.,

Plaintiff,

v.

JOHN DOES 1-32,

Defendants.

CIVIL ACTION

FILE NO: **11-CV-2939**

JURY TRIAL DEMANDED

**TWT**

Plaintiff, Raw Films, Ltd.. ("Plaintiff") for its complaint against John Does 1-32 (collectively the "Defendants") alleges as follows:

**Introduction**

1. This matter arises under the United States Copyright Act of 1976, as amended, 17 U.S.C. §§ 101 et seq. (the "Copyright Act").

2. Through this suit, Plaintiff alleges each Defendant is liable for:

- Direct copyright infringement in violation of 17 U.S.C. §§ 106 and 501;
- and
- Contributory copyright infringement.

**Jurisdiction And Venue**

3. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. § 1331 (federal question); and 28 U.S.C. § 1338 (patents, copyrights, trademarks and unfair competition).

4. As set forth on Exhibit A, each of the Defendants' acts of copyright infringement occurred using an Internet Protocol address ("IP address") traced to a physical address located within this District, and therefore this Court has personal jurisdiction over each Defendant because each Defendant committed the tortious conduct alleged in this Complaint in the State of Georgia, and (a) each Defendant resides in Georgia, and/or (b) each Defendant has engaged in continuous and systematic business activity, or has contracted anywhere to supply goods or services in Georgia.

5. Venue is proper in this District pursuant to 28 U.S.C. § 1391(b) and (c), because: (i) a substantial part of the events or omissions giving rise to the claims occurred in this District; and, (ii) a Defendant resides (and therefore can be found) in this District and all of the Defendants reside in this State; additionally, venue is proper in this District pursuant 28 U.S.C. § 1400(a) (venue for copyright cases) because each Defendant or each Defendant's agent resides or may be found in this District.

**Parties**

6. Plaintiff is a corporation organized and existing under the laws of the

United Kingdom, with its principal place of business located at 37 Warren Street, London, W1t 6ad, United Kingdom,

7. Each Defendant is known to Plaintiff only by an IP address. See Exhibit A.

8. An IP address is a number that is assigned by an Internet Service Provider (an “ISP”) to devices, such as computers, that are connected to the Internet.

9. The ISP to which each Defendant subscribes can correlate the Defendant’s IP address to the Defendant’s true identity.

### **Joinder**

10. Pursuant to Fed. R. Civ. P. 20(a)(2), each of the Defendants was properly joined because, as set forth in more detail below, Plaintiff asserts that: (a) each of the Defendants is jointly and severally liable for the infringing activities of each of the other Defendants, and (b) the infringement complained of herein by each of the Defendants was part of a series of transactions, involving the exact same piece of Plaintiff’s copyrighted Work, and was accomplished by the Defendants acting in concert with each other, and (c) there are common questions of law and fact; indeed, the claims against each of the Defendants are identical and each of the Defendants used the BitTorrent protocol to infringe Plaintiff’s copyrighted Work.

## **Factual Background**

### **I. Plaintiff Owns the Copyright to a Motion Picture**

11. Plaintiff's work is subject to copyright protection for the motion picture entitled "Raw Rescue" (the "Work"), pursuant to 17 U.S.C. §§ 104(b)(1)-(3) because one or more of the authors is a national or domiciliary of a treaty party; the Work was first published in a foreign nation that is a treaty party; and the Work qualifies as a sound recording that was first fixed in the territory of a treaty party.

12. Registering the copyright is not a condition precedent to bringing this action under 17 U.S.C. § 411 (a) because the subject copyright is not a "United States Work" within the meaning of that statute. Instead, the work underlying the copyright was created and/or published within the territory of a treaty party.

### **II. Defendants Used BitTorrent To Infringe Plaintiff's Copyright**

13. BitTorrent is one of the most common peer-to-peer file sharing protocols (in other words, set of computer rules) used for distributing large amounts of data; indeed, it has been estimated that users using the BitTorrent protocol on the Internet account for over a quarter of all Internet traffic. The creators and users of BitTorrent developed their own lexicon for use when talking about BitTorrent; a copy of the BitTorrent vocabulary list posted on [www.Wikipedia.com](http://www.Wikipedia.com) is attached as Exhibit B.

14. The BitTorrent protocol's popularity stems from its ability to distribute a large file without creating a heavy load on the source computer and

network. In short, to reduce the load on the source computer, rather than downloading a file from a single source computer (one computer directly connected to another), the BitTorrent protocol allows users to join a “swarm” of host computers to download and upload from each other simultaneously (one computer connected to numerous computers).

*A. Each Defendant Installed a BitTorrent Client onto his or her Computer*

15. Each Defendant installed a BitTorrent Client onto his or her computer.

16. A BitTorrent “Client” is a software program that implements the BitTorrent protocol. There are numerous such software programs including µTorrent and Vuze, both of which can be directly downloaded from the internet. See [www.utorrent.com](http://www.utorrent.com) and <http://new.vuze-downloads.com/>.

17. Once installed on a computer, the BitTorrent “Client” serves as the user’s interface during the process of uploading and downloading data using the BitTorrent protocol.

*B. The Initial Seed, Torrent, Hash and Tracker*

18. A BitTorrent user that wants to upload a new file, known as an “initial seeder,” starts by creating a “torrent” descriptor file using the Client he or she installed onto his or her computer.

19. The Client takes the target computer file, the “initial seed,” here the copyrighted Work, and divides it into identically sized groups of bits known as

“pieces.”

20. The Client then gives each one of the computer file’s pieces, in this case, pieces of the copyrighted Work, a random and unique alphanumeric identifier known as a “hash” and records these hash identifiers in the torrent file.

21. When another peer later receives a particular piece, the hash identifier for that piece is compared to the hash identifier recorded in the torrent file for that piece to test that the piece is error-free. In this way, the hash identifier works like an electronic fingerprint to identify the source and origin of the piece and that the piece is authentic and uncorrupted.

22. Torrent files also have an “announce” section, which specifies the URL (Uniform Resource Locator) of a “tracker,” and an “info” section, containing (suggested) names for the files, their lengths, the piece length used, and the hash identifier for each piece, all of which are used by Clients on peer computers to verify the integrity of the data they receive.

23. The “tracker” is a computer or set of computers that a torrent file specifies and to which the torrent file provides peers with the URL address(es).

24. The tracker computer or computers direct a peer user’s computer to other peer users’ computers that have particular pieces of the file, here the copyrighted Work, on them and facilitates the exchange of data among the computers.

25. Depending on the BitTorrent Client, a tracker can either be a

dedicated computer (centralized tracking) or each peer can act as a tracker (decentralized tracking).

C. Torrent Sites

26. “Torrent sites” are websites that index torrent files that are currently being made available for copying and distribution by people using the BitTorrent protocol. There are numerous torrent websites, including [www.TorrentZap.com](http://www.TorrentZap.com), [www.Btscene.com](http://www.Btscene.com), and [www.ExtraTorrent.com](http://www.ExtraTorrent.com).

27. Upon information and belief, each Defendant went to a torrent site to upload and download Plaintiff’s copyrighted Work.

D. Uploading and Downloading a Work Through a BitTorrent Swarm

28. Once the initial seeder has created a torrent and uploaded it onto one or more torrent sites then other peers begin to download and upload the computer file to which the torrent is linked (here the copyrighted Work) using the BitTorrent protocol and BitTorrent Client that the peers installed on their computers.

29. The BitTorrent protocol causes the initial seed’s computer to send different pieces of the computer file, here the copyrighted Work, to the peers seeking to download the computer file.

30. Once a peer receives a piece of the computer file, here a piece of the Copyrighted Work, it starts transmitting that piece to the other peers.

31. In this way, all of the peers and seeders are working together in what is called a “swarm.”

32. Here, each Defendant peer member participated in the same swarm and directly interacted and communicated with other members of that swarm through digital handshakes, the passing along of computer instructions, uploading and downloading, and by other types of transmissions. A print out of a computer screen illustrating the type of interactions between and among peers and seeders in a typical swarm is attached as Exhibit C.

33. In this way, and by way of example only, one initial seeder can create a torrent that breaks a movie up into hundreds or thousands of pieces saved in the form of a computer file, like the Work here, upload the torrent onto a torrent site, and deliver a different piece of the copyrighted Work to each of the peers. The recipient peers then automatically begin delivering the piece they just received to the other peers in the same swarm.

34. Once a peer, here a Defendant, has downloaded the full file, the BitTorrent Client reassembles the pieces and the peer is able to view the movie. Also, once a peer has downloaded the full file, that peer becomes known as “an additional seed” because it continues to distribute the torrent file, here the copyrighted Work.

E. Plaintiff’s Computer Investigators Identified Each of the Defendants’ IP Addresses as Participants in a Swarm That Was Distributing Plaintiff’s Copyrighted Work

36. Plaintiff retained IPP, Limited (“IPP”) to identify the IP addresses that are being used by those people that are using the BitTorrent protocol and the

internet to reproduce, distribute, display or perform Plaintiff's copyrighted works.

37. IPP used forensic software named INTERNATIONAL IPTRACKER v1.2.1 and related technology enabling the scanning of peer-to-peer networks for the presence of infringing transactions.

38. IPP extracted the resulting data emanating from the investigation, reviewed the evidence logs, and isolated the transactions and the IP addresses associated therewith for the file identified by the SHA-1 hash value of 8F2FA788E597FB6B206F93B4DA7669418D35AD4E (the "Unique Hash Number").

39. The IP addresses, Unique Hash Number and hit dates contained on Exhibit A accurately reflect what is contained in the evidence logs, and show:

- (A) Each Defendant had copied a piece of Plaintiff's copyrighted Work identified by the Unique Hash Number; and
- (B) Therefore, each Defendant was part of the same series of transactions.

40. Through each of the transactions, each of the Defendants' computers used their identified IP addresses to connect to the investigative server from a computer in this District in order to transmit a full copy, or a portion thereof, of a digital media file identified by the Unique Hash Number.

41. IPP's agent analyzed each BitTorrent "piece" distributed by each IP address listed on Exhibit A and verified that re-assemblage of the pieces using a BitTorrent Client results in a fully playable digital motion picture of the Work.

42. IPP's agent viewed the Work side-by-side with the digital media file that correlates to the Unique Hash Number and determined that they were identical, strikingly similar or substantially similar.

**Miscellaneous**

43. All conditions precedent to bringing this action have occurred or been waived.

44. Plaintiff retained counsel to represent it in this matter and is obligated to pay said counsel a reasonable fee for its services.

**COUNT I**  
**Direct Infringement Against Does 1-32.**

45. The allegations contained in paragraphs 1-44 are hereby re-alleged as if fully set forth herein.

46. Plaintiff is the owner of the Registration for the Work which contains an original work of authorship.

47. By using the BitTorrent protocol and a BitTorrent Client and the processes described above, each Defendant copied the constituent elements of the registered Work that are original.

48. Plaintiff did not authorize, permit or consent to Defendants' copying of its Work.

49. As a result of the foregoing, each Defendant violated Plaintiff's exclusive right to:

(A) Reproduce the Work in copies, in violation of 17 U.S.C. §§ 106(1) and 501;

(B) Redistribute copies of the Work to the public by sale or other transfer of ownership, or by rental, lease or lending, in violation of 17 U.S.C. §§ 106(3) and 501;

(C) Perform the copyrighted Work, in violation of 17 U.S.C. §§ 106(4) and 501, by showing the Work's images in any sequence and/or by making the sounds accompanying the Work audible and transmitting said performance of the Work, by means of a device or process, to members of the public capable of receiving the display (as set forth in 17 U.S.C. § 101's definitions of "perform" and "publically" perform); and

(D) Display the copyrighted Work, in violation of 17 U.S.C. §§ 106(5) and 501, by showing individual images of the Work nonsequentially and transmitting said display of the Work by means of a device or process to members of the public capable of receiving the display (as set forth in 17 U.S.C. § 101's definition of "publically" display).

50. Each of the Defendants' infringements was committed "willfully" within the meaning of 17 U.S.C. § 504(c)(2).

51. Plaintiff has suffered actual damages that were proximately caused by each of the Defendants including lost sales, price erosion and a diminution of the value of its copyright.

**COUNT II**  
**Contributory Infringement Against Does 1-32.**

52. The allegations contained in paragraphs 1-44 are hereby re-alleged as if fully set forth herein.

53. Plaintiff is the owner of the Registration for the Work which contains an original work of authorship.

54. By using the BitTorrent protocol and a BitTorrent Client and the processes described above, each Defendant copied the constituent elements of the registered Work that are original.

55. By participating in the BitTorrent swarm with the other Defendants, each Defendant induced, caused or materially contributed to the infringing conduct of each other Defendant.

56. Plaintiff did not authorize, permit or consent to Defendants' inducing, causing or materially contributing to the infringing conduct of each other Defendant.

57. Each Defendant knew or should have known that other BitTorrent users, here the other Defendants, would become members of a swarm with Defendant.

58. Each Defendant knew or should have known that other BitTorrent users in a swarm with it, here the other Defendants, were directly infringing Plaintiff's copyrighted Work by copying constituent elements of the registered

Work that are original.

59. Indeed, each Defendant directly participated in and therefore materially contributed to each other Defendant's infringing activities.

60. Each of the Defendants' contributory infringements were committed "willfully" within the meaning of 17 U.S.C. § 504(c)(2).

61. Plaintiff has suffered actual damages that were proximately caused by each of the Defendants including lost sales, price erosion, and a diminution of the value of its copyright.

WHEREFORE, Plaintiff respectfully requests that the Court:

(A) Permanently enjoin each Defendant and all other persons who are in active concert or participation with each Defendant from continuing to infringe Plaintiff's copyrighted Work;

(B) Order that each Defendant delete and permanently remove the torrent file relating to Plaintiff's copyrighted Work from each of the computers under each such Defendant's possession, custody or control;

(C) Order that each Defendant delete and permanently remove the copy of the Work each Defendant has on the computers under Defendant's possession, custody or control;

(D) Find that each Defendant is jointly and severally liable for the direct infringement of each other Defendant;


(E) Award Plaintiff its reasonable attorneys' fees and costs pursuant to 17

U.S.C. § 505; and

(F) Grant Plaintiff any other and further relief this Court deems just and proper.

**PLAINTIFF DEMANDS A JURY TRIAL ON ALL ISSUES SO TRIABLE.**

This 1<sup>st</sup> day of September, 2011.

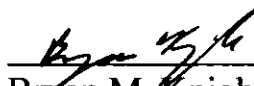
  
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**CERTIFICATE OF COMPLIANCE**

Pursuant to Local Rule 7.1(D), N.D. Ga. L.R., I hereby certify that the PLAINTIFF'S COMPLAINT has been prepared using one of the font and point selections approved by the Court in Local Rule 5.1B, N.D. Ga. This document was prepared using Times New Roman (14 pt.).

This 1<sup>st</sup> day of September, 2011.

  
\_\_\_\_\_  
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SHA-1 Hash: 8F2FA788E597FB6B206F93B4DA7669418D35AD4E Title: Raw Rescue  
Rights Owner: Raw Films Ltd.

Index	IP Address	Date/Time	City	State	ISP	Network
1	72.145.163.89	6/20/2011 12:42	Stockbridge	GA	BellSouth.net	BitTorrent
2	72.152.24.239	6/7/2011 0:23	Buford	GA	BellSouth.net	BitTorrent
3	74.176.4.211	7/17/2011 5:12	Cartersville	GA	BellSouth.net	BitTorrent
4	74.179.189.93	7/13/2011 11:09	Savannah	GA	BellSouth.net	BitTorrent
5	74.184.198.208	3/4/2011 14:03	Alpharetta	GA	BellSouth.net	BitTorrent
6	74.232.60.90	3/13/2011 21:53	Bremen	GA	BellSouth.net	BitTorrent
7	74.232.68.215	7/16/2011 2:37	Mableton	GA	BellSouth.net	BitTorrent
8	74.232.95.189	3/13/2011 0:17	Fayetteville	GA	BellSouth.net	BitTorrent
9	74.244.51.20	3/13/2011 15:49	Decatur	GA	BellSouth.net	BitTorrent
10	74.246.131.178	6/26/2011 19:36	Zebulon	GA	BellSouth.net	BitTorrent
11	98.92.197.61	3/4/2011 6:20	Smyrna	GA	BellSouth.net	BitTorrent
12	98.92.40.229	7/12/2011 17:53	Duluth	GA	BellSouth.net	BitTorrent
13	24.126.162.247	7/1/2011 11:36	Alpharetta	GA	Comcast Cable	BitTorrent
14	24.131.62.115	3/4/2011 16:46	Lawrenceville	GA	Comcast Cable	BitTorrent
15	24.30.107.29	6/7/2011 20:53	Norcross	GA	Comcast Cable	BitTorrent
16	24.98.208.248	3/12/2011 19:19	Marietta	GA	Comcast Cable	BitTorrent
17	24.98.232.236	7/17/2011 15:39	Lawrenceville	GA	Comcast Cable	BitTorrent
18	24.98.69.186	6/3/2011 20:25	Lawrenceville	GA	Comcast Cable	BitTorrent
19	67.190.205.74	6/5/2011 7:17	Saint Marys	GA	Comcast Cable	BitTorrent
20	68.51.188.107	7/16/2011 4:38	Hinesville	GA	Comcast Cable	BitTorrent
21	68.54.186.116	7/13/2011 22:04	Savannah	GA	Comcast Cable	BitTorrent
22	71.199.164.233	3/3/2011 13:41	Decatur	GA	Comcast Cable	BitTorrent

## EXHIBIT A

MGA2

Index	IP Address	Date/Time	City	State	ISP	Protocol
23	71.204.35.104	7/15/2011 1:20	Jonesboro	GA	Comcast Cable	BitTorrent
24	76.97.115.234	6/6/2011 21:15	Cartersville	GA	Comcast Cable	BitTorrent
25	76.97.136.72	3/9/2011 3:42	Loganville	GA	Comcast Cable	BitTorrent
26	76.97.92.57	6/26/2011 1:37	Cartersville	GA	Comcast Cable	BitTorrent
27	98.244.189.240	3/9/2011 14:27	Savannah	GA	Comcast Cable	BitTorrent
28	108.76.117.115	7/1/2011 0:19	Marietta	GA	SBC Internet Services	BitTorrent
29	99.170.171.145	6/23/2011 6:13	Stockbridge	GA	SBC Internet Services	BitTorrent
30	75.117.44.40	7/18/2011 18:50	Milledgeville	GA	Windstream Communications	BitTorrent
31	98.17.155.181	7/18/2011 18:58	Milledgeville	GA	Windstream Communications	BitTorrent
32	98.18.91.250	7/18/2011 15:55	Moultrie	GA	Windstream Communications	BitTorrent

EXHIBIT A

MGA2

# BitTorrent vocabulary

From Wikipedia, the free encyclopedia

(Redirected from Terminology of BitTorrent)

This list explains terms used when discussing **BitTorrent clients**, and in particular the BitTorrent protocol used by these clients.

## Common BitTorrent terms

### Announce

Same as "scrape" (see below), but a client also announces that it wants to join the swarm and that the server should add it to the list of peers in that swarm.

### Availability

(Also known as distributed copies.) The number of full copies of the file available to the client. Each seed adds 1.0 to this number, as they have one complete copy of the file. A connected peer with a fraction of the file available adds that fraction to the availability, if no other peer has this part of the file.

*Example:* a peer with 65.3% of the file downloaded increases the availability by 0.653. However, if two peers both have the same portion of the file downloaded - say 50% - and there is only one seeder, the availability is 1.5.

### Choked

Describes a peer to whom the client refuses to send file pieces. A client *chokes* another client in several situations:

- The second client is a *seed*, in which case it does not want any pieces (i.e., it is completely *uninterested*)
- The client is already uploading at its full capacity (it has reached the value of `max_uploads`)
- The second client has been blacklisted for being abusive or is using a blacklisted BitTorrent client.

### Client

The program that enables p2p file sharing via the BitTorrent protocol. Examples of clients include  $\mu$ Torrent and Vuze.

### Downloader

A *downloader* is any peer that does not have the entire file and is downloading the file. This term, used in Bram Cohen's Python implementation, lacks the negative connotation attributed to *leech*. Bram prefers *downloader* to *leech* because BitTorrent's tit-for-tat ensures downloaders also upload and thus do not unfairly qualify as *leeches*.

EXHIBIT B

## End Game

BitTorrent has a couple of download strategies for initializing a download, downloading normally among the middle of the torrent, and downloading the last few pieces (see below) of a torrent. Typically, the last download pieces arrive more slowly than the others since the faster and more easily accessible pieces should have already been obtained, so to prevent this, the BitTorrent client attempts to get the last missing pieces from all of its peers. Upon receiving a piece, a cancel request command is sent to other peers.

## Fake

A fake torrent is a torrent that does not contain what is specified in its name or description (i.e. a torrent is said to contain a video, but it contains only a snapshot of a moment in the video, or in some cases a virus).

## Hash

The hash is a string of alphanumeric characters in the .torrent file that the client uses to verify the data that is being transferred. It contains information like the file list, sizes, pieces, etc. Every piece received is first checked against the hash. If it fails verification, the data is discarded and requested again. The 'Hash Fails' field in the torrent's General tab shows the number of these hash fails.

Hash checks greatly reduce the chance that invalid data is incorrectly identified as valid by the BitTorrent client, but it is still possible for invalid data to have the same hash value as the valid data and be treated as such. This is known as a hash collision.

## Health

Health is shown in a bar or in % usually next to the torrents name and size, on the site where the .torrent file is hosted. It shows if all pieces of the torrent are available to download (i.e. 50% means that only half of the torrent is available).

## Index

An *index* is a list of .torrent files (usually including descriptions and other information) managed by a website and available for searches. An *index* website can also be a *tracker*.

## Interested

Describes a downloader who wishes to obtain pieces of a file the client has. For example, the uploading client would flag a downloading client as 'interested' if that client did not possess a piece that it did, and wished to obtain it.

## Leech

A *leech* is a term with two meanings. Usually it is used to refer a *peer* who has a negative effect on the swarm by having a very poor share ratio (downloading much more than they upload). Most leeches are users on asymmetric internet connections and do not leave their BitTorrent client open

to seed the file after their download has completed. However, some leeches intentionally avoid uploading by using modified clients or excessively limiting their upload speed.

The often used second meaning of *leech* is synonymous with *downloader* (see above): used simply to describe a *peer* or any client that does not have 100% of the data. This alternative meaning was mainly introduced by most BitTorrent tracker sites.

## Lurker

A *lurker* is a user that only downloads files from the group but does not add new content. It does not necessarily mean that the lurker will not seed. Not to be confused with a *leecher*.

## p2p

Stands for "peer to peer", which is the technology used for file sharing among computer users over the internet. In a p2p network, each node (or computer on the network) acts as both a client and a server. In other words, each computer is capable of both sending and receiving data.

## Peer

A *peer* is one instance of a BitTorrent client running on a computer on the Internet to which other clients connect and transfer data. Usually a *peer* does not have the complete file, but only parts of it. However, in the colloquial definition, "peer" can be used to refer to any participant in the swarm (in this case, it's synonymous with "client").

## Piece

This refers to the torrented files being divided up into equal specific sized pieces (e.g. 512Kb, 1Mb). The pieces are distributed in a random fashion among peers in order to optimize trading efficiency.

## Ratio credit

A *ratio credit*, also known as *upload credit* or *ratio economy*, is a currency system used on a number of private trackers to provide an incentive for higher upload/download ratios among member file-sharers. In such a system, those users who have greater amounts of bandwidth, hard drive space (particularly seedboxes) or idle computer uptime are at a greater advantage to accumulate ratio credits versus those who are lacking in any one or more of the same resources.

## Scrape

This is when a client sends a request to the tracking server for information about the statistics of the torrent, such as with whom to share the file and how well those other users are sharing.

## Seeder

A *seeder* is a *peer* that has an entire copy of the torrent and offers it for upload. The more *seeders* there are, the better the chances of getting a higher download speed. If the seeder seeds the whole copy of the download, they should get faster downloads.

## Share ratio

A user's share ratio for any individual torrent is a number determined by dividing the amount of data that user has uploaded by the amount of data they have downloaded. Final share ratios over 1 carry a positive connotation in the BitTorrent community, because they indicate that the user has sent more data to other users than they received. Likewise, share ratios under 1 have negative connotation.

## Snubbed

An uploading client is flagged as *snubbed* if the downloading client has not received any data from it in over 60 seconds.

## Super-seeding

When a file is new, much time can be wasted because the seeding client might send the same file piece to many different peers, while other pieces have not yet been downloaded at all. Some clients, like ABC, Vuze, BitTornado, TorrentStorm, and  $\mu$ Torrent have a "super-seed" mode, where they try to only send out pieces that have never been sent out before, theoretically making the initial propagation of the file much faster. However the super-seeding becomes substantially less effective and may even reduce performance compared to the normal "rarest first" model in cases where some peers have poor or limited connectivity. This mode is generally used only for a new torrent, or one which must be re-seeded because no other seeds are available.

## Swarm

*Main article: segmented downloading*

Together, all *peers* (including *seeders*) sharing a *torrent* are called a *swarm*. For example, six ordinary *peers* and two *seeders* make a *swarm* of eight.

## Torrent

A *torrent* can mean either a .torrent metadata file or all files described by it, depending on context. The *torrent file* contains metadata about all the files it makes downloadable, including their names and sizes and checksums of all pieces in the *torrent*. It also contains the address of a *tracker* that coordinates communication between the peers in the swarm.

## Tracker

A *tracker* is a server that keeps track of which seeds and peers are in the swarm. Clients report information to the tracker periodically and in exchange, receive information about other clients to which they can connect. The tracker is not directly involved in the data transfer and does not have a copy of the file.

## See also

Retrieved from "[http://en.wikipedia.org/wiki/BitTorrent\\_vocabulary](http://en.wikipedia.org/wiki/BitTorrent_vocabulary)"  
Categories: BitTorrent | Lexis

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Cardo X

EXHIBIT C